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ABSTRACT

Innovative programs for the promotion of small-scale enterprise are being conducted by a variety of organizations, including universities, government agencies, international research institutes, and voluntary assistance agencies. Their activities encompass basic extension services, management of cooperatives, community action programs, and marketing. Some of these programs in Africa (Ghana, Kenya, Nigeria, Swaziland), the Philippines, India, and the United States are described, and some of the small-scale industry centers around the world are listed. Research projects, publications, conferences, and related references are also listed in this bulletin. (MSE)

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Rural Development Network bulletin

Overseas Liaison Committee • American Council on Education • No. 7, September, 1977

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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Small-Scale Industries

It has been argued by many over the past few decades that the introduction of large-scale, capital-intensive technologies into the developing world has created a host of problems. These technologies are usually very costly relative to the income of local populations. They also require scientific, educational and industrial infrastructures which take decades to establish. Finally, they have in too many instances been shown to have disruptive social consequences as they primarily serve the needs of middle and upper income groups dwelling in local urban sectors and in already industrialized societies.

Improving small-scale industry capabilities in the developing world has for some time been viewed by researchers and rural development specialists as an alternative way to foster increased economic development. This interest can be closely identified with the increasingly popular concern for "appropriate technologies." Appropriate Technology (A.T.) is the concept--popularized in the U.S. largely as a result of E. F. Schumacher's book, Small is Beautiful: Economics as if People Mattered (Blond & Briggs, Ltd., London, 1973)--that economic development, to be successful, must begin at the grass-roots level, and that the technical characteristics of innovations should be realistically matched to human needs and physical resources of developing regions so as to encourage minimal disruption of the social environments. For some groups this means that technology should have as its goals: (1) to increase people's productivity without eliminating their involvement in production, i.e., identification with the final product; (2) to be established on a small enough scale so that it can be used by a dispersed population; (3) to be relatively simple to facilitate local maintenance; and (4) to be relatively inexpensive so as to be affordable.

HE009204

Since the founding of the Intermediate Technology Development Group, Ltd., by Schumacher in the mid-sixties, several independent but similarly-oriented organizations have been established. They all are concerned with establishing mechanisms for developing A.T. aids and for their dissemination and transfer in the developing world. A.T. organizations are also interested

in being of assistance to the underdeveloped domestic areas of the industrialized world where traditional value systems and subsistence economies exist alongside highly technological economies.

Although small-scale industry and A.T. could never serve as "cure-alls" for the ills of the world's developing areas, they do offer new alternatives. This Bulletin attempts to contribute to the accumulated and growing state of knowledge in the field of A.T. and small-scale industry. It describes current efforts to develop conceptual frameworks for examining rural non-farm sectors and their roles in rural development schemes; the Bulletin focuses on some on-going programs designed to build institutional capacities and local skills for the promotion of rural small-scale enterprises. It also provides information on some of the recent literature as well as organizations which have been assisting people to develop devices and machines specifically designed to meet local needs.

For the purposes of this issue of the Bulletin the terms "small-scale," "appropriate," "low-cost," "alternative," "intermediate," and "soft" are used interchangeably. The choice of one term in preference to another is a reflection of differences in emphasis (e.g., techniques and scales of operation) rather than of fundamental differences in goals.

Coordinator for this issue was Ms. Joyce Mortimer of the OLC Secretariat. Information on current research and documentation was compiled by Research Assistants, Mr. Robert Fishbein (Michigan State University), and Mr. Richard Sokolsky (Johns Hopkins School of Advanced International Studies).

Copies of the RDN Bulletin may be ordered without charge from the Overseas Liaison Committee while supplies are available. Multiple copies are available through the ERIC Document Reproduction Service, P.O. Box 190, Arlington, Virginia 22210, USA. This publication is catalogued under number HE 009-204 and is available on microfiche for US$.83 plus US$.13 postage (first class) in paper copy at US$2.06 plus airmail or surface postage.

Action Programs and Current Research

Innovative programs for the promotion of small-scale enterprise are being conducted by a variety of organizations. These include universities, government agencies, international research institutes, and voluntary assistance agencies. Their activities encompass basic extension services, management of cooperatives, community action programs, and marketing. Following are descriptions of selected projects in Africa, Latin America, and Asia.

GHANA: TECHNOLOGY CONSULTANCY CENTRE (TCC). Located at the University of Science and Technology, Kumasi, Ghana, TCC provides technical and

financial aid to small enterprises. TCC is currently seeking grant support to help four bead-making villages on a business-like basis. Approximately 250 families are producing beads in these villages. The grant money is to be used to import pigments and flux for sale to the bead makers. This would enable them to improve bead quality, lower costs by 40 percent, and double production. TCC then would help the cooperative obtain a regular import license. As the cooperative progressively reimbursed TCC, the money would be used to build temperature-regulated kilns. Upon repayment, the capital would be used to erect a permanent Ashanti bead market on a site just outside the Kumasi central market.

Further information on this and other TCC projects may be obtained by writing the Technology Consultancy Centre, University of Science and Technology, Kumasi, Ghana.

KENYA: RURAL ENTERPRISE EXTENSION SERVICE (REES). This is a program designed to provide direct training in management problems to small entrepreneurs in Kenya. The scheme consists of fifteen extension officers, informally named the "bicycle brigade." These officers work with small businesses in the towns and market areas of Western Province. Before entering the field, these extension officers undergo intensive training at the Friends College in Kaimosi and the Friends Bible Institute. The REES program grew out of previous work conducted by Dr. Malcolm Harper, Professor of Business Administration at the University of Nairobi. Professor Harper had experimented with the approach in Machakos.

A 400-page training and implementation guide on REES has recently been completed and will be published by the Intermediate Technology Group, Ltd., London. REES is assisted by the Partnership for Productivity Foundation/USA, a multinational, non-sectarian, Quaker-sponsored foundation. It is involved in programs to assist small business development in rural areas in Africa. Current programs are operating in Kenya and Liberia and others are under discussion. Further details on PFP and their other programs may be obtained from the Partnership for Productivity Foundation/USA, Inc., P.O. Box 170, Annandale, Virginia 22003, USA.

NIGERIA: INDUSTRIAL RESEARCH AND DEVELOPMENT UNIT (IRDU), of the University of Ife provides extension and applied research services to small business firms. IRDU's Management Development Division has established two field offices--one in Ile-Ife, just outside of the University campus, and the other at Ado-Ekiti, about 100 kilometers away. Each office is staffed by two extension officers, a clerk-typist, an office assistant, and a driver. Officers and clients can draw on IRDU's staff of management and technical specialists, as well as the resources of the entire University of Ife to solve problems. Several engineering departments have on-going research and development programs in appropriate technology (A.T.) and the University is establishing a workshop to build prototypes for new equipment.

IRDU is planning to open a third field office at Ikorodu in Lagos State. Three additional offices are projected to be operational by the end of 1978, in Western State, Kwara State, and mid-Western State. The Unit's new industrial services activity is a natural outgrowth of its censuses of small-scale industries in five of Nigeria's twelve states.

For more information, contact Dr. O. A. Oguntoye, Director, Management Development Division, Industrial Research and Development Division, University of Ile-Ife, Nigeria.

SWAZILAND: SMALL ENTERPRISES DEVELOPMENT CORPORATION, LTD. SEDCO is an independent company jointly owned by the Government of Swaziland and the Swaziland Development and Savings Bank. It was established in 1970 to aid in the promotion of small-scale industrial enterprises through the provision of financial and technical assistance, premises and equipment, and the organization of marketing. Since that time SEDCO has: established a series of industrial estates; undertaken market and feasibility studies to determine the viability of diverse enterprises in various locations; and erected over 60 factory shells since 1970.

Markets have been opened up in neighboring Botswana, Lesotho, Mozambique, South Africa, as well as in Britain, France, and the United States. Special training centers have been established for pottery at Mbabane, woodworking at Piggs Peak, metal-working at Manzini, and tanning at Hlatikhulu. In addition, SEDCO has been operating a Special Small Enterprises and Handicrafts Development project since March 1972 with UNDP/ILO assistance. Experience of the first five years indicates that bookkeeping is the most important training need of the entrepreneurs. Thus, skills in management and business methods have received more emphasis in the training process in recent years.

For more details, write to the Small Enterprises Promotion Office of the Ministry of Industry, Mines and Tourism, Mbabane, Swaziland, or Professor Gavin Maasdorp, Department of Economics, Natal University, Natal, South Africa.

PHILIPPINES: AGRICULTURAL ENGINEERING DEPARTMENT (AED), INTERNATIONAL RICE RESEARCH INSTITUTE (IRRI), is assisting with the local manufacture of agricultural machinery in the Philippines. The AED has conducted surveys and studies of small manufacturers in the Philippines and the major problems and obstacles of these firms were identified. IRRI has designed tillers, threshers, and weeders which local manufacturers could produce and market.

Two regional extension offices have been established, one in Pakistan, the other in Thailand, to identify manufacturers interested in producing AED-designed machines and to provide technical assistance. AED staff will conduct economic and market evaluation studies to determine which machines offer the greatest potential for adoption, conduct tests to determine the performance of AED-designed machines under local conditions, and provide business and management guidance to local manufacturers of AED-designed machines.

For further information write to Dr. Amir Khan, IRRI/PAK, c/o LAPSA, P.O. Box 1237, Islamabad, Pakistan or Mr. Peter Steward Bartan, c/o The Rockefeller Foundation, P.O. Box 2453, Bangkok, Thailand.

INDIA: SMALL INDUSTRY EXTENSION TRAINING INSTITUTE (SIETI). SIETI was established as a Government of India Society in 1962 to assist in the promotion and modernization of small industries by undertaking training,

research, and consultancy activities in small industry development, management, and extension. In 1967, SIETI enlarged its training programs to include special annual international courses for officers from developing countries. More than 45 regular training courses, both domestic and international, are offered yearly. An eight-week Handicrafts Marketing course was inaugurated in 1976 to train Indian handicraft department personnel.

SIETI also houses the Small Enterprises National Documentation Centre (SENDOC), which is responsible for the collection, collation, storage, and dissemination of information about technological and managerial advancement of small industries. A quarterly digest, Appropriate Technology Documentation Bulletin, is available at RS. 25 annually.

For further information write: SIET Institute, Yousufguda, Hyderabad 500 045, India. Inquiries about international training programs should be addressed to the Principal Director. Orders for SENDOC publications should be sent to the Director of Documentation.

UNITED STATES: INTERNATIONAL PROGRAM FOR HUMAN RESOURCE DEVELOPMENT (IPHRD), is a private voluntary non-profit organization established in 1972. The primary goal of the organization is to increase employment and educational opportunities for rural people in less developed countries.

As a result of experiences gained through its locally controlled Human Resource Development Centers (which are IPHRD-sponsored and supported by national development organizations) in Beirut, Lebanon and later in India, IPHRD, since 1974, has focused upon handicraft development as a job-generating program. The Aid and Trade Center-International was created in 1974, as the social marketing project of IPHRD to promote handicraft marketing in the U.S. It is located in the Connor Building, 7720 Wisconsin Avenue, Bethesda, Maryland 20014, USA, telephone (202) 656-1200. Originally concentrating on marketing Lebanese crafts, this project was expanded to include products from more than 40 developing countries.

This is the only voluntary non-profit organization in the U.S. which has bridged both church and secular bases and which has generated a large portion of its operating funds from marketing of handicrafts. A new commitment of the organization is to create a Development Assistance Fund, supported by marketing. Ten percent of retail and 5 percent of wholesale sales will be deposited in a special account; and that fund will be earmarked for assisting selected development projects overseas. This will be the first time any marketing organization has undertaken to link development assistance directly to marketing.

For further information write: Dr. Varghese Keerikatti, IPHRD, P.O. Box 30216, Bethesda, Maryland 20014, USA.

UNITED STATES: NEW TRANSCENTURY FOUNDATION. TransCentury, in collaboration with Partnership for Productivity and Volunteers in Technical Assistance, are in the process of designing and coordinating implementation of a small-scale pilot project to introduce technological innovations to village women in Kenya. This project will be distinctive for two reasons:

(a) while developers have traced the process of introducing village-based innovations in the past, very few efforts have been made to document the dyanmics of technology introduction and its effect on improving the economic productivity, income and quality of life of women and, through them, rural households as a whole; (b) while the impact of technological innovation on rural peoples has been examined, few if any attempts have been made to systematically analyze either the positive or negative effects of change on women.

This kind of analysis is critical since development projects are frequently initiated with only the farmer (often erroneously assumed to be the male) in mind; if impact on female villagers is considered, such consideration usually comes after the project is well under way. Ensuring that technological innovation impacts beneficially and not adversely on women, i.e., that it is appropriate, in the fullest sense, can be viewed as one approach to integrating women in development.

The project goal is to increase productivity, income, and quality of life for rural women and, through them, rural households. The project purpose is to test the capacity of a development project to successfully introduce income-generating and/or quality of life-improving innovations to rural women. Project outputs will include measurable impact, both positive and negative, of innovations. Further information may be obtained by writing to Ms. Mary Ann Riegelman, New TransCentury Foundation, 1789 Columbia Road, N.W., Washington, D.C. 20009.

UNITED STATES: TECHNOSERVE, INC., a non-profit organization, is helping to establish cooperatives and small businesses in El Salvador and Honduras. The Nueva Concepcion Rice Cooperative is an example of one of these projects. The cooperative is located about 40 miles from El Salvador's capital city, San Salvador. Membership in the cooperative is made up of 400 farmers in the Nueva Concepcion area. Plans are underway to expand present operations and to establish a complete rice milling facility, including the introduction of two mechanical rice threshers. If this project is successful, the rice farmers will realize a substantial increase in income due to a better return from overall rice production activities. The project will generate new jobs as the rice farms expand and hire additional farm labor.

Another project aided by Technoserve is a cooperative of small furniture manufacturers in Tegucigalpa, Honduras. An initial survey revealed that the lack of kiln-dried wood was a serious problem. Technoserve helped the cooperative install a kiln. Member shops are receiving technical assistance to improve product quality and design and to secure export contracts. Since 1970, the project has increased employment from about 200 to approximately 1,000 craftsmen. Cooperative membership has grown significantly, and now totals 113 firms.

Technoserve's goal is to provide technical assistance for the establishment of self-help enterprises among low-income people in developing countries. Emphasis is given to initiation or expansion of indigenously owned enterprises which contribute to rural productivity, employment generation, and income distribution, particularly those projects which increase production/distribution of high-protein food. For further

information, write: Technoserve, Inc., 36 Old King's Highway South, Darien, Connecticut 06820, USA.

UNITED STATES: VOLUNTEERS IN TECHNICAL ASSISTANCE (VITA), is a U.S. organization which is assisting with the development of appropriate technologies from small businesses. VITA responds to requests by individuals or organizations needing technical assistance to solve specific problems by drawing on a network of 6,000 scientists and engineers who provide advice free of charge. Most requests are related to agricultural implements, the development of new techniques for using agricultural by-products, and utilization of solar and water energy.

UNIAO Nordestina de Assistencia a Pequenas Organizacoes (UNO) in northeastern Brazil provides credit, management, and technical assistance to small businesses in urban areas. With the aid of VITA, UNO has expanded its original program in Recife to a second center in Salvador. VITA is presently helping UNO members search for low-cost techniques of cutting glass bottles for domestic and artistic purposes. Other VITA programs in Latin America are concerned with developing appropriate technologies to aid in rural development.

Many requests imply a need for locally produced goods and therefore have implications for the development of small-scale industries to meet these demands. Two examples of these activities are: (1) VITA assistance to a firm in Mexico provided information on the design and prototype construction of a 24-egg incubator to be used by campesinos; (2) VITA helped with the construction of a small hand-powered rice huller in Colombia. The first model is now helping 100 people.

Readers interested in more information and assistance should contact VITA, 3706 Rhode Island Avenue, Mount Rainier, Maryland 20822, USA.

Following are brief descriptions, wherever possible, of a few of the numerous small-scale industry centers throughout the world. Please note that budgetary constraints may make it difficult for some organizations to respond to lengthy inquiries.

Africa

BOTSWANA

Pelagano Village Industries
P.O. Box 464
Gaborone
--Provides assistance to small-scale businesses in raw materials and marketing techniques. Model project industries include gourd handicrafts, water systems, diamond mesh fencing, and backyard poultry units.

Rural Industries Promotions
P.O. Box 18
Gaborone

CAMEROON

Panafrican Institute for Development
Centre of Applied Research
B.P. 4056
Douala

EGYPT

General Organisation for Industrialisation
4, Moderied El Tahrir Street
Garder City
Cairo

ETHIOPIA

Appropriate Technology Unit
Christian Relief and Development Association
P.O. Box 5674
Addis Ababa
--Gathers and disseminates information on appropriate technology developed by other communities. Reports include information on termite control; building a simple earth road; using soybeans in traditional Ethiopian dishes; and oil barrel water filters.

Village Technology Innovation
P.O. Box 1107
Asmara

GHANA

University of Science and Technology
Technology Consultancy Centre
University Post Office
Kumasi

IVORY COAST

Institut africain pour le développement économique et social
(African Institute for Economic and Social Development)
B.P. 8008
Abidjan

KENYA

Kenya Industrial Estates, Ltd.
Rural Industrial Development Program
P.O. Box 18282 Likoni Road
Nairobi

LESOTHO

Lesotho Agricultural College
Village Technology Development Unit
P.O. Box 829
Maseru

NIGERIA

International Institute of Tropical Agriculture
P.M.B. 5320
Ibadan

Federal Institute of Industrial Research, Oshodi
Private Mail Bag
Ikaja Airport, Lagos State

NIGERIA Continued

University of Ife
Industrial Research Unit
Ile-Ife

SENEGAL

E.N.D.A.
B.P. 3370
Dakar

SWAZILAND

Small Enterprises Development Corporation
P.O. Box 451
Mbabane

TANZANIA

Small Industries Development Organization
P.O. Box 2476
Dar es Salaam

Tanzanian Agricultural Machinery Testing Unit (TAMTU)
Box 1839
Arusha
--Acting as an extension agent for farms in the surrounding area, TAMTU develops do-it-yourself technologies and manufactures a range of animal-drawn farm equipment.

TOGO

Small-Scale Industries Programme
c/o UN Development Programme
B.P. 911
Lomé

Asia and the Pacific

BANGLADESH

Agricultural Development Agencies in Bangladesh (ADAB)
549 F, Road 14
Dhanmandi, Box 5945
Dacca 5
--ADAB trains and educates rural villagers in areas such as fish farming, through forums, workshops, consultations, and publications.

BANGLADESH Continued

Cottage Industry Project
Islamic University
Santosh, Tangail

The Director
B.A.R.C.
130-C, Dhanmoudi Resid. Ar.
Road No. 1
Dacca-5

FIJI

Ministry of Commerce, Industry and Cooperatives
Development Bank Centre
Victoria Parade
Suva

HAWAII

East-West Technology and Development Institute
East-West Center
1777 East-West Road
Honolulu, Hawaii 96822, USA
--Has established self-help and low-cost housing programs in cooperation with appropriate institutions in Thailand, Indonesia, Philippines, and Korea.

INDIA

Application of Science and Technology to Rural Development (ASTRA)
Prof. K. Krishna Prasad
Indian Institute of Science
Bangalore, 560 0012
--Students and faculty combine research, development concepts, and testing in projects geared to increase local self-reliance. Projects have included rural housing, handpumps, solar air conditioning, and helping agricultural and dairy units in Ungra village to install bio-gas.

Ministry of Industry and Civil Supplies
Appropriate Technology Cell
268 Udyog Bhavan
New Delhi 110011

Appropriate Technology Development Association
C1-/1 River Bank Colony
Lucknow
Uttar Pradesh

INDIA Continued

Appropriate Technology Development Group
BLV/36 Safdarjung Development
New Delhi 16

Garg Consultants
C-10/1, River Bank Colony
Lucknow
Uttar Pradesh
--Firm is developing 'mini' sugar plants and cement technology, cottage mechanized spinning units, methane gas production as well as "other decentralized small production industries."

Gandhian Institute of Studies
Appropriate Technology Development Unit
P.O. Box 116, Rajghat
Varanasi 221001

Geet R.D. Singh
Rural Industries Project
Buniadganj, Gayal
Bihar

Mohan Parikh
Agricultural Tool Research
Bardoli, Gujrat

Planning Research and Action Division
State Planning Institute, U.P.
Kalakankar House
Lucknov

Solar Energy
Technology Bhavan
New Delhi 110029

INDONESIA

Village Technology Unit BUTSI
Jalan Halimum 4
Jakarta
--VTU/BUTSI is a network of several thousand village-level workers who publish easy to read books in Indonesian on technical innovations for villagers. Publications include information on making twoie from coconut fibers, reforestation for flood control, simple solar stoves and a treadle grinder for removing coconut meat.

ISRAEL

International Technical Cooperation Centre
P.O. Box 3082
Tel Aviv

Rural Industrialization Limited
P.O. Box 29896
Tel Aviv

Tel Aviv University
Interdisciplinary Centre for Technological Analysis and Forecasting
Ramat-Aviv
Tel Aviv

JAPAN

CECOCO
Chuo Boeki Goshi Kaisha
P.O. Box 8
Ibaraki City
Osakea Pref
567 Japan
--Since 1916 Japan has been developing technologies to meet the specific needs of developing countries in the areas of food production and cottage industries. Maintains a farm for testing innovations and training personnel in their use.

PAKISTAN

Appropriate Technology Development Organization (ATDO)
Planning and Development Division
Government of Pakistan
17-B Satellite Town
Rawalpindi
--Places emphasis on developing new products from local resources, such as: paper from banana plants, vinegar from overripe dates, harnessing energy from low head waterfalls (3-10 KW), and ox-driven earth movers. Receives funding to support R&D in other agencies inside and outside the country.

Appropriate Technology Centre
506 P Block
President's Secretarian-Planning Division
Government of Pakistan
Islamabad

PAPUA NEW GUINEA

Department of Labour and Industry
Industrial Projects
P.O. Box 5644
Boroko

Industrial Development Education
P.O. Alekishafen
Madang District

Department of Business Development
Small Industries Division
Post Office Wards Strip
Waigani

PHILIPPINES

International Rice Research Institute (IRRI)
P.O. Box 933
Manila
--Although known for genetic research to adapt rice and other crops to regional conditions, IRRI also maintains a Small-Scale Agricultural Project. Through this project, tillers, threshers, and harvest equipment have been designed in a cooperative effort with local farmers and craftspeople. Blueprints are available to interested manufacturers.

Regional Adaptive Technology Center
Mindanao State University
Marawi City
Mindanao

University of the Philippines
Institute of Small-Scale Industries (ISSI)
Virata Hall, Diliman
Quezon City

SINGAPORE

Technonet Asia - Asian Network for Industrial Technology Information and Extension
Tanglin P.O. Box 160
Singapore 10

SRI LANKA

The Sri Lanka Center for Development Studies
17 Park Avenue
Colombo 5

Appropriate Technology Group
C.X. de Saram
c/o Chemical Industries Ltd.
Box 352
Colombo 5

G. M. Yoganandan
Department of Highways
Research Laboratory
Ratmalana

THAILAND

Asian Institute of Technology
P.O. Box 2754
Bangkok
--Graduate students and faculty conduct research on the areas of water science, transportation, geotechnical, environmental, and other engineering subjects. Research to date has yielded information on storage of rainfall, ferrocement for rice storage, and also a filtration system using shredded coconut and burned rice husks.

United Nations Economic Commission for Asia and the Pacific
Division of Industry and Housing
Sala Santitham
Bangkok 2

Southeast Asia Technology Company, Limited (SEATEC)
Nai Lert Building
87 Sukhumuit Road
Bangkok

Caribbean

JAMAICA

Jamaica Industrial Development Corporation
Small Industries Division
P.O. Box 505
Kingston

TRINIDAD AND TOBAGO

Caribbean Industrial Research Institute
Information Service to Industry
University Post Office
St. Augustine, Trinidad

Industrial Development Corporation
Small Business Division
P.O. Box 949
Port-of-Spain, Trinidad

VIRGIN ISLANDS (U.S.)

Island Resources Foundation, Inc.
P.O. Box 4187
St. Thomas 00801, USA

Europe

AUSTRIA

United Nations Industrial Development Organization
P.O. Box 707
A-1011 Vienna

BELGIUM

International Federation of Small and Medium-Sized Commercial Enterprises (FIPMC)
9, rue Joseph II
1040 Brussels

DENMARK

Institute for Development Research
104 Vester Voldgade
KD-1552 Copenhagen V

FRANCE

Société d'Aide technique et de Cooperation (SATEC)
Society for Technical Aid and Cooperation
110, rue de l'Université
Paris

United Nations Educational, Scientific, and Cultural Organization
Department of Scientific and Technological Development
Place Fontenoy
Paris 75007

FRANCE Continued

Organisation for Economic Cooperation and Development (OECD)

(1) Development Assistance Directorate
Chauteau de la Muette
75 Paris 16

(2) Science, Technology and Development
2, rue André-Pascal
75775 Paris Cedex 16

(3) Technology and Industrialisation Programme
94, rue Chardon-Lagache
750 Paris Cedex 16

GERMANY (WEST)

Deutsche Stiftung fur Internationale Entwicklung
(German Foundation for International Development)
1 Berlin 27 (Tegel) - Reiherwerder
and
53 Bonn
Endenicher Str. 41

ITALY

C.E.C.S.E.N.E.
(Italian Centre for Cooperation with the Building Development of Emerging Nations)
Via Borgosesia 30
10145 Torino

NETHERLANDS

Appropriate Technology Group
Mijnbouwplein 11 (Tuinhuisje)
Delft

Eindhoven University of Technology
Subcommittee for Microprojects
Institute of Development Cooperation
P.O. Box 513
Eindhoven

Division of Microprojects
Technische Hogeschool Eindhoven
Postbus 513
Eindhoven

Stichting Technische Ontwikkeling Ontwikkelings Landen (TOOL)
(Technical Development for Developing Countries)
Postbus 525
Eindhoven (continued)

--An organization of collaborative research groups, TOOL accepts questions from developing countries and devises information packages to meet local needs. Studies have included: grain storage, soap preparation, latrines, bamboo in construction, as well as wind energy.

SWITZERLAND

International Labour Organisation
CH 1211
Geneva 22

Union Internationale de l'Artisanat et des Petites et Moyennes Entreprises
(International Union of Artisans and Small and Medium Enterprises)
98, rue de Saint-Jean
1211 Geneva 11

UNITED KINGDOM

Council for Small Industries in Rural Areas
35 Camp Road
Wimbledon Common
London, SW19 4UP

International Development Centre
Voluntary Committee on Overseas Aid and Development
Parnell House
25 Wilton Road
London SW1V 1JS

Intermediate Technology Development Group, Limited (ITDG)
Parnell House
25 Wilton Road
London, SW1V 1JS

National Institute of Agricultural Engineering
Overseas Department (OD)
Wrest Park
Silsoe, Bedfordshire
--OD designs, constructs, and tests instruments and machinery for agricultural use in developing countries. Examples are: a hand-operated winnower, simple water pump, mini thresher, and an animal-drawn tool bar.

UNITED KINGDOM Continued

OXFAM
274 Banbury Road
Oxford OX2 7DZ
--In addition to its relief activities, OXFAM has undertaken projects to design water pumps, hospital equipment, and a composting privy for disaster areas.

Latin America

ARGENTINA

Banco Nacional de Desarrollo
(National Development Bank)
Small Industry Department
25 de May 145
Buenos Aires

C.I.M.E.
(Center for Investigation of Methods and Techniques for Small and Medium Enterprises)
Instituto Nacional de Tecnologia Industrial
Libertad 1235
Buenos Aires

BRAZIL

Banco de Nordeste de Brasil
(Bank of Northern Brazil)
Small Industry Division
Industrial and Investment Department
Rua Major Facundo No. 500
Fortaleza, Ceara

Fundacao Educacional de Sul de Santa Catarina (FESSC)
(Educational Foundation of Southern Santa Catarina)
Caixa Postal 370
Tubarao, Santa Catarina

CHILE

Corporacion Industrial Para El Desarrollo Regional (CIDERE)
(Industrial Corporation for Regional Development)
Anibal Quinto 372
Concepcion
--Quasi-governmental organization whose objective is to create jobs for rural people by maximizing use of natural resources in the regions. One project involves the utilization of sawdust as fuel.

C.O.N.I.C.Y.T.
(National Council for Scientific and Technological Research)
Canada 308
Casilla 297-V
Santiago

COLOMBIA

Asociacion Nacional de Instituciones Financieras (ANIF)
(National Association of Financial Institutions)
Service of Assistance to Small and Medium Industry
Calle 12 #7-14, Piso 7
Bogotá (1)

F.I.C.I.T.C.E.
(Foundation for the Promotion of Scientific and Technological Research)
Apartado Aereo 27872
Bogotá
--A consulting service which numbers among its projects: cloth cutting machines, grain drivers, studies of soybean nutrition, and a bicycle-powered generator.

Centro de Desarrollo Integrado e Investigaciones Tropicales "Las Gaviotas"
c/o Jorge Zapp
Bogotá
--Small-scale industries projects include design of a low-cost Mitchell turbine, and development research projects for the use of water resources. One example is the use of plastic tubes filled with stabilized earth in construction of water conduits.

COSTA RICA

Centro de Investigaciones en Technologia de Alimentos
(Food Technology Research Center)
Universidad de Costa Rica
San José
--Programs focus on helping to prevent harvest loss, stabilizing prices and increasing the range of

COSTA RICA Continued

available foods. Research is in progress on vegetable and fruit processing including fermentation and dehydration for home and small-scale use.

ECUADOR

Centro de Capacitacion Integral del Campesion de Pastaza
c/o Guillermo Prentice
Casilla 757
Puvo, Oriente
--The center works primarily in the areas of animal-drawn farm equipment, drainage techniques and grain drying. It is supported jointly by the Ecuadorean Episcopal Church and the Ministry of Agriculture.

Centro de Desarrollo Industrial del Ecuador
(Industrial Development Center of Ecuador)
Apartado 2321
Quito

S.I.T.
Technical and Information Service
Casilla 5833
Guayaquil

EL SALVADOR

Fundacion Salvadorena de Desarrollo y Vivienda Minima
c/o José Roberto Castillo Paredes
18 Avenida Norte 633
Apartado Postal (06) 421
San Salvador
--Focuses primarily on low-cost housing for the poor.

GUATEMALA

Instituto Centroamericano de Investigacion y Technologia Industrial (ICAITI)
(Central American Institute of Research and Industrial Technology)
Apartado Postal 1552
Guatemala City

GUATEMALA Continued

Laboratorio de Energia Solar
c/o John Hibbits
Estacion Esperimental
Canton Chogur
Quesaltenango
--Over the years, this workshop has developed capabilities in: solar water heaters, green houses, wind generators, methane digesters, utilization of native plants, and agricultural experimentation.

MEXICO

Centro de Estudio Generales, A.C.
Apartado 732
Chihuahua, Estado de Chihuahua
--Implements educational models in the areas of health, construction, particularly the utilization of ferrocement in housing construction, and community services.

C.I.M.M.E.T.
(International Maize and Wheat Improvement Center)
Apartado Postal 6-641
Mexico 6, D.F.

Mexican Institute of Technological Research
Calzada Legaria 694
Mexico 10, D.F.

NICARAGUA

C.O.P.C.I.T.
(Clearinghouse of Peace Corps Intermediate Technology)
Apartado 2355
Managua

PERU

Banco Industrial del Peru
Technical Assistance Program for Rural Industry
Apartado 1230
Lima

VENEZUELA

Corporación de Desarrollo de la Pequena y Mediana Industria
(Corporation for Development of Small and Medium Industry)
Maracay

VENEZUELA Continued

Universidad de Carabobo
Oficina de Desarrollo Industrial
Apartado 820
Valencia

North America

CANADA

The Brace Research Institute
P.O. Box 400 MacDonald Campus
McGill University
St. Anne de Bellevue 800
Quebec H0X 3M1
--Brace works in active collaboration with rural dwellers in the developing world (e.g., Haiti, Barbados & Senegal), to increase local self-reliance. Projects have included: wind pumps, solar driers, steam cookers, sulphur block houses, solar stills, and low-cost steam turbines. Do-it-yourself plans are available.

Canadian Hunger Foundation
25 rue Sparks
Ottawa.

Mennonite Central Committee
210-1483 Pembing Highway
Winnipeg, Manitoba

The Minimum Cost Housing Group
School of Architecture
McGill University
Montreal, Quebec

World Association of Industrial and Technological Research Organisations (WAITRO)
3650 Westbrook Crescent
Vancouver 8

UNITED STATES

Center for Maximum Potential Building Systems
School of Architecture
University of Texas
Austin, Texas 78712

UNITED STATES Continued

Cornell University
Program on Policies for Science and Technology in Developing Nations
180 Uris Hall
Ithaca, New York 14853

Earth Resources Development Research Institute (ERDRI)
Hearst Hall
Wisconsin Avenue & Woodley Rd., NW
Washington, D.C. 20016
--An international non-profit organization which focuses on long-range solutions to the problems of world hunger and human living conditions. Through a concept of "Climax Agriculture"--soil and ecosystem revitalization and stabilization--ERDRI develops for each micro-ecosystem a plant and animal community able to exist in equilibrium with the physical and biological environment and which is also of economic value. One such project is being developed for Niger.

Ecology Action/Common Ground (EA/CG)
2225 El Camino Real
Palo Alto, California 94306
--Conducts research and education programs in the biodynamic/French intensive method of small farm agriculture. To date, research in California has shown an increase of $400/pounds per hectare of vegetables produced, using 1/2 the water and nitrogen fertilizer and 1/100 the human and mechanical energy of traditional U.S. methods.

Farallones Institute
15290 Coleman Valley Road
Occidental, California 95465

Georgia Institute of Technology
Industrial Development Division
Atlanta, Georgia 30332

UNITED STATES Continued

Institute for Local Self-Reliance
1717 18th Street, NW
Washington, D.C. 20009
--This Institute is of interest because of its focus on appropriate technology applications in urban centers. Research is underway regarding the potential of economic and technological alternatives for urban self-reliance in one of the economically disadvantaged sections of the nation's capital. Projects include rooftop gardening, in-house sewage treatment, commercial sprouting production, and urban solar energy.

Intermediate Technology
556 Santa Cruz Avenue #6
Menlo Park, California 94025

International Bank for Reconstruction and Development (World Bank)
1818 H Street, NW
Washington, D.C. 20433

National Center for Appropriate Technology
P.O. Box 3838
Butte, Montana 59701

National Science Foundation
Office of International Programs
Washington, D.C. 20550

The New Alchemy Institute
P.O. Box 432
Woods Hole, Massachusetts 02543
--Conducts basic research which can be integrated into human living systems. The staff has completed two "Arks," one in Costa Rica and a newer version on Prince Edward Island, Canada. The "Ark" combines greenhouses, windpower, fish ponds, solar heat, sewage use and midge growth in a self-contained human life support system.

Oak Ridge National Laboratories
Oak Ridge, Tennessee

UNITED STATES Continued

Opportunities Industrialization Centers International (OICI)
240 West Tulpenhocken Street
Philadelphia, Pennsylvania 19144

Program of Advanced Studies in Institution Building and Technical Assistance Methodology (PASITAM)
University of Indiana
1005 East 10th Street
Bloomington, Indiana 47401

Rodale Press Research Center
33 East Minor Road
Emmaus, Pennsylvania 18049
--Has been a long-time advocate of organic farming methods. Rodale has become a technical center for testing and innovating high quality low impact tools. One innovation is in the area of "pedal power," where attachments for one unit can grind corn, till fields, open cans and produce electricity. Research is also underway in the areas of methane digestors, testing solar panels, food storage and preservation, and companion planting.

Technical Assistance Information Clearinghouse (TAICH)
200 Park Avenue South, 11th Floor
New York, New York 10003

Technoserve, Inc.
36 Old King's Highway South
Darien, Connecticut 06820

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Volunteers in Technical Assistance (VITA)
3706 Rhode Island Avenue
Mt. Rainier, Maryland 20822

UNITED STATES Continued
Windworks
Route 3
Box 329
Mukwonago, Wisconsin 53149

United States Continued
Zomeworks
c/o Steve Baer
P.O. Box 712
Albuquerque, New Mexico 87103
--This is a low-cost solar consulting group which sells plans, inventions or time on proven innovations such as solar water heaters, drum walls, bead walls, and sky-lids.

Research Projects

THE ROLE OF SMALL-SCALE INDUSTRY IN EMPLOYMENT GENERATION AND RURAL DEVELOPMENT IN SIERRA LEONE. This is a four-year study by Carl Liedholm and Enyinna Chuta, based on primary data on small-scale enterprises in Sierra Leone which was collected in two phases during 1974-1975. The first phase was a census of small-scale industry to provide an estimate of the population of small industrial establishments in the entire country. "Small-scale" industry was defined to include enterprises employing less than 50 persons. Within this classification the study identified several subdivisions of firm size which reflected variations in firm characteristics. Chuta and Liedholm discovered that 95 percent of small enterprises were located in Sierra Leone's rural areas and that tailoring was the most important small industry, followed by carpentry, gara* dyeing, baking, and blacksmithing.

The second phase involved collecting data from a sample of 366 small-scale establishments which were enumerated twice weekly for one year. Detailed information was collected on the structural parameters of the rural small-scale industrial sector and the linkages with other sectors. Different sampling techniques were utilized to insure representativeness of the five major industries: tailoring; carpentry; gara dyeing; baking and blacksmithing. The key results emerging from the analysis are:

(1) Small-scale industries account for 95 percent of the employment in the entire industrial sector, thus dominating that portion of the economy;

(2) In view of the high labor intensity characterizing small industries in Sierra Leone, the output-capital ratios were found to be higher for small-scale industries than for large-scale industries, suggesting their efficient use of scarce capital. Moreover, small-scale industries in Sierra Leone all generated a positive economic profit, proving their economic viability;

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*Gara is a native cloth.

(3) Small-scale industries operating in small villages are smaller, utilize more labor-intensive techniques, and have more excess capacity than their large city counterparts. This finding suggests the importance of incorporating "locational factors" into small-scale industry analyses;

(4) The demand elasticities for small industry products are strongly positive; that is, as consumers' incomes rise, they demand more of these goods. This fact, plus the substantial forward linkage found between the blacksmithing industry and agricultural modernization, and the strong evidence of export demand for gara dyeing products, indicate a growing demand for small-scale industrial products in the near future.

The study also examines the various policy implications of these results, focusing primarily on credit policy and training programs. Several other policies which have indirect impact on small-scale industries are suggested as subjects for further research.

In view of the data results and their policy implications, the authors conclude that the small-scale industrial sector can play a key role in the achievement of Sierra Leone's employment and output objectives. The study provides a valuable empirical foundation upon which policy makers in Sierra Leone can plan and implement development programs.

The results of this four-year study, completed in September 1976, are published in a monograph by Carl Liedholm and Enyinna Chuta entitled, "An Economic Analysis of Small-Scale Industry in Sierra Leone," an African Rural Economy Paper forthcoming in 1976. The monograph may be obtained without charge by writing to African Rural Economy Program, Department of Agricultural Economics, Michigan State University, East Lansing, Michigan 48824, USA.

AN EMPIRICAL STUDY OF SMALL-SCALE INDUSTRY IN KENYA was conducted in 1973 by the Institute for Development Studies (IDS), University of Nairobi, under a grant from the Rockefeller Foundation. The research was carried out among rural firms associated with the Rural Industrial Centers (RIDC's). RIDC's are extension facilities designed to assist small firms in management, technical, and credit affairs. The study focused on firms which benefited from the services of the RIDC's in an effort to provide a profile of relatively successful rural entrepreneurs. Eighty-seven firms were surveyed from four regions of Kenya. Some of the tentative results of this study were:

(1) Small-scale businesses in Kenya are growing at an "accelerating" rate.

(2) Public infrastructure investment, such as electricity and roads, can facilitate the development of small enterprises.

(3) The growth of small-scale industries is strongly related to growth of other sectors of the economy through the creation of higher incomes and secondary markets.

(4) Working capital appeared to be a more "binding constraint" than initial credit availability, that is, entrepreneurs found it less

difficult to secure funds for the initial establishment of their businesses than for expansion and modernization of their operations.

The final results of the study have been published under the title, Small-Scale Industry in Kenya, by Frank C. Childs. Copies may be obtained by writing Ms. Sydney B. Westley, University of Nairobi, P.O. Box 30197, Nairobi.

THE ROLE OF APPRENTICE TRAINING IN THE SMALL-SCALE INDUSTRIAL SUBSECTOR IN WESTERN NIGERIA. Although the apprenticeship system is an important component of small-scale industry in Africa there is surprisingly little known about the economics of this system. The apprenticeship system provides jobs for young men and women and helps them acquire skills and entrepreneurial training. The study will include representative industries in both rural and urban areas in Western Nigeria. The three main categories of data being collected are:

(1) the structure of the system, that is, the participants in the system and the physical environment in which they operate;

(2) the conduct of the system, which includes contracts, obligations, apprentice fees and wages, types of training, and length of training; and,

(3) the performance of the system, which is measured by the gain in income resulting from apprentice training, increased post-training employment prospects, and employer's income from apprenticeship fees relative to his overall income.

The initial work of recruiting and training enumerators began in February 1976 and is now in progress. The full-scale survey will be completed by December of 1976. Further information may be obtained by writing to Adewale Mabawonku, Department of Agricultural Economics, University of Ibadan, Ibadan, Nigeria.

RURAL INDUSTRIALIZATION IN THE UNITED REPUBLIC OF TANZANIA: A CASE STUDY. In 1973 a need to provide data on rural industrial activity was perceived by Tanzanian policy makers. To this end, the Department of Economics, University of Dar es Salaam, conducted an "exploratory" survey of rural industries in four regions of Tanzania. The survey sought to gather preliminary data about the spatial distribution of rural industries established and the effects rural industrialization has on employment, income, social structure, and urban/rural relationships. The results of this survey were summarized by Justinian F. Rweyemamu in a presentation to an Expert Group Meeting on Rural Industrialization in Bucharest, September 24-28, 1973. Information on obtaining copies of this presentation may be obtained by contacting the Department of Economics, University of Dar es Salaam, P.O. Box 35045, Dar es Salaam, Tanzania.

AGRICULTURAL MODERNIZATION, NON-FARM EMPLOYMENT AND LOW-LEVEL URBANIZATION--A CASE STUDY OF A CENTRAL LUZON SUB-REGION IN THE PHILIPPINES is the title of a 1974 Ph.D. dissertation submitted to the University of Michigan by Arthur Gibb, Jr. Gibb investigates the linkages between non-agricultural employment and the agricultural modernization process in the Philippines. High Yielding Varieties (HYV) were introduced in Central Luzon in 1966. Mr. Gibb undertook a study in 1971/72 to measure the change in employment

in selected non-farm activities for a four-year period, 1967-71 and less precisely for the previous six years, 1961-67. The data were used to calculate the elasticity of non-farm employment with respect to the change in agriculture brought about by the Green Revolution and other modernizing factors.

Non-farm industries were identified and divided into five categories: stores and shops; light transport services; crafts, construction and specialty industries; public services; and agro-industries. The structural characteristics of these industries were examined in detail. Several questions which relate small-scale, non-farm industries to development strategies are brought to light. Among them are the impact of technical change, the source of capital on the growth of non-farm employment, and the rate at which non-farm industries should shift to more capital-intensive techniques.

The study concludes that growth in most non-farm industries in towns and villages is strongly linked to the growth and modernization of agriculture. Dr. Gibb concludes that the traditional urban-rural framework is inadequate for an economic analysis of non-farm employment. The distinction ought instead to be made between "the countryside--with towns and cities" and "the industrial/export enclaves." This would allow a wider perspective which could take account of these apparent linkages between the non-farm and agricultural sectors. Copies of the dissertation may be obtained by writing University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106 USA. Prices are as follows:

Academic requests:	$15.00 paper copy
	$ 7.50 microfilm
Non-Academic requests:	$20.00 paper copy
	$10.00 microfilm

For further information, Dr. Gibb may be contacted at the Department of Economics, U.S. Naval Academy, Annapolis, Maryland, USA.

SMALL-SCALE INDUSTRY IN CHINA: In June-July 1975 a 12-member U.S. team of engineers and social scientists visited the People's Republic of China to study rural small-scale industry. The excursion was organized by the Committee on Scholarly Communications with the People's Republic of China in Washington, D.C. The U.S. delegation visited selected rural industries, observed their characteristics, and conferred with local officials. The team examined rural small-scale industry in the context of China's economic and social goals. The drive toward mechanization, the building of rural infrastructure, the technical training of local peasants, the emphasis on self-reliance, and the concept of "walking on two legs" were mentioned as some of the important factors to consider when trying to understand the complexities of China's experience with rural small-scale industry. The findings of the mission will be published in a volume entitled Rural Small-Scale Industry in the People's Republic of China--A Report of the American Rural Small-Scale Industry Delegation. The volume will include an examination of the administrative systems and worker incentives; an evaluation of the economic efficiencies in the context of agricultural mechanization and economic development; an analysis of the technical aspects of farm machinery, chemical fertilizer, and cement industries; and examination of social impacts of small industry and the diffusion of technology.

The report was published in December 1976 by the University of California Press, 2223 Fulton Street, Berkeley, California 94720 USA.

INTERNATIONAL CO-OPERATIVE ALLIANCE has begun a research project entitled "The Economic and Social Potential of Industrial Co-operatives in Developing Countries." Research objectives are to explore, based on comparative case studies, the factors leading to success or failure of industrial co-operatives (in the size range 20-100) based on 'handicraft' or 'industrial' technology in countries with differing policies toward co-operatives. These factors upon (for which) information is being gathered include: participation in 'policy'; goal setting and control systems; financing; marketing/production; role of ideology; equality within the enterprise; education and training of personnel (at all levels); laws and by-laws; role of governments; contribution to economic and social development; and relationship to local community as factor in success or failure of cooperatives. Researchers--under the supervision of Professor Peter Abell, Birmingham University, U.K.--are reviewing selected case studies in a Latin American and an Asian country, and in two African countries.

Another pertinent activity of the Alliance is the development of pilot/experimental projects in West Africa relevant to promoting functional literacy as a component of co-operative education. For further information contact Mr. Graham Alder, Development Officer, International Co-operative Alliance, 11 Upper Grosvenor Street, London W1X 9PA, United Kingdom.

Conferences

A CONFERENCE/SEMINAR ON TECHNIQUES AND METHODOLOGIES FOR STIMULATING SMALL-SCALE LABOR INTENSIVE INDUSTRIES IN DEVELOPING COUNTRIES was held in Atlanta, Georgia by the Industrial Development Division of Georgia Institute of Technology on 10-14 March 1975. The conference was attended by 121 persons from 15 countries. Representatives from public, private, and educational institutions discussed case histories and current programs. Among the presentations were reports by the Intermediate Technology Group and the International Rice Research Institute. Copies of the proceedings are available for $5.00 (postpaid) from the Industrial Development Division, Engineering Experiment Station, Georgia Institute of Technology, Atlanta, Georgia 30332.

THE FIRST TOOL CONGRESS ON APPROPRIATE TECHNOLOGY was held at the University of Nijmegen, the Netherlands 13-14 February, 1976. The Congress featured speakers from the Intermediate Technology Development Group Ltd., London; Sri Lanka; Tanzania; the Dutch Government; and TOOL.

TOOL is a cooperative organization which makes available technical knowledge to developing countries upon request. The organization draws on the resources of eight cooperating institutions, which include universities and technical resource groups, and an extensive documentation system. Many requests result in further research and a publication by TOOL of general information on the subject.

For further information on TOOL activities and the February 1976 Congress mentioned above write: Stichting TOOL, P.O. Box 525, Eindhoven, the Netherlands.

Publications

AMERICAN COUNCIL OF VOLUNTARY AGENCIES FOR FOREIGN SERVICE, Small Scale Industry: Development Assistance Abroad. Technical Assistance Information Clearing House, New York.

This is a directory of U.S. nonprofit organizations and international organizations involved in small-scale industry, development aid, and aid programs. An annotated bibliography on small-scale industry is included.

Appropriate Technology is a quarterly journal published by Intermediate Technology Publications, Ltd. The journal was created to facilitate the exchange of information among people involved in finding practical solutions to local technological problems. Subscription rates can be requested from Intermediate Technology Publications, Ltd., 9 King Street, Covent Garden, London WC2E 8HN, United Kingdom.

Appropriate Technology: Problems and Promises, edited by Nicolas Jequier, is a recently released book published by the Organisation for Economic Co-operation and Development (OECD). It contains a general discussion of appropriate technology as well as case studies. Subject areas covered are the origins and meanings of appropriate technology, the innovations system in appropriate technology, information networks, the role of the universities, factors involved in building up new industries, and the design of national policies for appropriate technology. Available from OECD Publications, 2 rue Andre-Pascal, 75775 Paris Cedex 16, France, or from OECD sales agents in 33 other countries.

Appropriate Technology Sourcebook: A Guide to Plans and Methods for Village and Intermediate Technology, by Kenneth Darrow and Rick Pam, is a bibliography on resource books, tools to make tools, agricultural cooperatives, periodicals, and ordering information. Available for U.S. $1.50 (U.S. $.50 to developing countries) from the Appropriate Technology Project, Volunteers in Asia, Box 4543, Stanford, California 94305, U.S.A.

CANADIAN HUNGER FOUNDATION has issued an Appropriate Technology Manual. For further information contact the Brace Research Institute, P.O. Box 400, MacDonald Campus, McGill University, St. Anne de Bellevue 800, Quebec H0X 3M1, Canada.

First Steps to Village Mechanization, by G. A. MacPherson, is available free from the Tanzania Publishing House, P.O. Box 2138, Dar es Salaam, Tanzania.

GEORGIA INSTITUTE OF TECHNOLOGY has released two publications by John R. Kaatz on the financing of small-scale industry:

--Finance and Small-Scale Industry Lending in the Philippines, 1967-1973. December 1975, 99 pages. Price: U.S. $3.00.

--Financing Small-Scale Industry: The Tubarao, Brazil Case, January 1976. 33 pages. Price: U.S. $3.00.

Both publications are available from the International Development Data Center EDL-EES, Georgia Institute of Technology, Atlanta, Georgia 30332, U.S.A.

Development and Dissemination of Appropriate Technologies in Rural Areas. This publication may be obtained free from the DSE-Dokumentation, D-53 Bonn, Germany, Endenisherstr 41.

HAMMOND, R. W. Selected Aspects of Intermediate Technology. Engineering Experiment Station, Economic Development Laboratory, Atlanta, Georgia, 1976. 18 pp. Pictorial Monograph No. 01. Provides examples of appropriate technology and low-cost labor-intensive strategies.

HAWRLYSHYN, O. Biases Towards Capital-Intense Techniques and the Employment Problems in LDC's. (Discussion paper, QUIER, No. 187) Queen's University, Institute for Economic Research, Kingston, Ontario, 1975. 27 pp. and diagrams. This is an economic analysis of possible institutional bias.

Industrial Development Abstracts. The United Nations Industrial Organization (UNIDO) was established in 1966 to promote industrial development in developing countries with particular emphasis on the manufacturing sector. UNIDO publishes Industrial Development Abstracts, a specialized guide to documentation on industrialization in developing countries. Abstracts includes major studies and reports; proceedings and reports from expert working groups; and reports relating to technical assistance, including feasibility studies and project reports. Orders for Industrial Development Abstracts should be addressed to Sales Section, United Nations Headquarters, New York, New York 10017, U.S.A.; or to Distribution and Sales Section, Palais des Nations, CH-1211 Genem 10, Switzerland. Price: U.S. $5.00.

Intermediate Technology is prepared by the Intermediate Technology Development Group (ITDG) in London, United Kingdom. The bulletin covers ITDG projects in the areas of building, agriculture, food technology, industry, water storage and catchment, cooperatives, rural health, and power, and university liaison. Each issue is available for U.S. $.20 from the ITDG headquarters, 9 King Street, London WC2E 8HN, England. The group also publishes specialized bibliographies and handbooks. Readers may wish to inquire about Food from Windmills by Peter Fraenkel, in which Fraenkel reports on a windmill irrigation project on the Omo River in Ethopia (U.S. $9.00 shipped airmail and U.S. $5.45 shipped surface mail). Publications listings are available from the same address.

Intermediate Technology Report is the quarterly bulletin of Intermediate Technology, 556 Santa Cruz Avenue, Menlo Park, California 94025, U.S.A. Annual subscription: U.S. $10.00.

INTERNATIONAL LABOUR OFFICE (ILO), a specialized agency associated with the United Nations, provides expert advice and technical assistance to individual countries. It also maintains a clearinghouse for information and research relating to the improvement of labor conditions. Several ILO publications particularly related to small-scale industries are:

--Handicraft and Small-Scale Industries. Provides a list of ILO publications and documents.

--Report on ILO/ECA/SIDA Workshop on Participation of Women in Handicrafts and Small Industries - Kitwe, Zambia, 9-20 December 1974.

--Policies and Programmes of Action to Encourage the Use of Technologies Appropriate to Asian Conditions and Priority Needs. Report of the ILO Technical Meeting on Adaptation of Technology to Suit Special Market Conditions of Developing Countries, Bangkok, November 3-14, 1975.

--Technology and Employment in History: A Case Study Approach. Edited by A. S. Bhalla. Foreword by Amartya Sen. A World Employment Program (WEP) Study. 1975. Paperbound copies: SW Frs 37.50 or U.S. $14.95.

Another document available from ILO is Rural Industrialization and Employment, a study made by David B. Steele for the Rural and Urban Employment Policies Branch. This two-part monograph is a review and analysis of past and current employment-related studies on rural industrialization. Part One contains several definitions which serve to resolve difficult conceptual problems related to analysis of rural industries. A key distinction made is between the traditional, intermediate, and modern sectors of an economy. Part Two deals with empirical evidence gathered on different rural industrialization programs. Case studies are presented to show how various development strategies and programs for the promotion of rural enterprise have performed, and "narrow-front" versus "broad-front" strategies are discussed. Individual entrepreneurship systems are contrasted with cooperative and communal schemes. Programs in the intermediate sector are examined and compared with programs in the traditional sector. The author asserts that transition of rural industries from the traditional to the intermediate state of development is a vital step toward bringing about widespread dynamic growth in the rural areas.

Information on all ILO publications may be obtained by writing the International Labour Office, CH 1211, Geneva, Switzerland.

LIPTON, M., Research into the Economics of Food Storage in Less Developed Countries: Prospects for a Contribution from U.K. Technical Assistance. IDS Communication No. 61. Institute of Development Studies, University of Sussex, Brighton, United Kingdom, 1971. 15 pp. Contains bibliography and notes.

MAKHIJANI, A., "Solar Energy and Rural Development for the Third World," Bulletin of the Atomic Scientists, Chicago, Vol. 32, No. 6 (June 1976) pp. 14-24.

The author discusses energy, government policy, developing countries' need for appropriate technology, role of solar energy, what these energy needs are, use of wind power. Bibliography and notes are included.

OHKAWA, K. and M. TAJIMA, Small-Medium Scale Manufacturing Industry: A Comparative Study of Japan and Developing Nations. University of Tsukuba, Tokyo. International Development Center of Japan (IDCJ), 1976. 33 pp. with graphs and tables.

This is part of the IDCJ Working Paper Series (No. A-02). It describes small-scale industry and industrial production and includes a comparative analysis of Japan's and developing countries' productivity employment distribution, measurement of production functions, and statistical data. Contains bibliographic notes.

The Role of UNIDO in Promoting the Agricultural Machinery and Implements Industry. This is a summary of the contents and forms in which assistance for the agricultural machinery industry can be obtained through UNIDO, the types of programs that have been established, and the procedures for obtaining assistance. Copies of the document are free from the Industrial Technology Division, United Nations Industrial Development Organization (UNIDO), P.O. Box 707, A-1011 Vienna, Austria.

SCHUMACHER, E. F., Small Is Beautiful: Economics as if People Mattered. Drawing on wide experience as an economist and scholar to present a moral and practical primer on the need to humanize and reduce the scale of technology in service to economic development, E. F. Schumacher outlines the philosophical and practical premises for the development and use of intermediate and appropriate technologies. The author presents this position by calling for a revised, more "people-oriented" approach to economic development. A continuing theme throughout the book is that technologies should have their roots in the physical and cultural environments in which they operate.

Regarding the Third World, a case is made for the development of technologies which are larger in scale than traditional techniques, but smaller in scale than processes characteristic of developed nations. The establishment of numerous small "workplaces" in the rural areas and small towns is seen as a means of developing local people's technical skill and participation in development programs.

The book also touches upon such broad contemporary issues as social and industrial organization, resource use, and environmental management. Available in the United States from Harper & Row, 10 East 53rd Street, New York, New York 10022, U.S.A. Price: U.S. $3.75.

SEDME: A Quarterly Journal Devoted to Small Enterprises Development, Management and Extension is published by the Small Industry Extension Training Institute of Hyderabad, India. It contains articles on various aspects of entrepreneurial development, training, and management

in India. Annual subscription rate: U.S. $8.00. Contact Principal Director, Small Industry Extension Training Institute, Hyderabad 500 045, India.

Small Industry Development Network (SIDN) Bulletin is published quarterly by the Georgia Institute of Technology. Subscriptions are available free of charge from Small Industry Development Newsletter, Economic Development Laboratory, Engineering Experiment Station, Georgia Institute of Technology, Atlanta, Georgia 30332, U.S.A.

Technology and Economics in International Development: Report of a Seminar includes papers and summaries of comments presented at a seminar held in Washington, D.C., on May 23, 1972. The meeting was designed to clarify the relationship of the macro-economic framework in developing countries on the choice of technologies introduced into these countries. Another purpose of the seminar was to simulate sustained interaction between economists and technologists engaged in developmental activities. The document (No. PB 211192) is available for U.S. $3.00 from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22152, U.S.A.

Technoserve Newsletter is published on an occasional basis by Technoserve, Inc. The Spring 1976 issue contains a discussion of technology and the development process, as well as a summary of Technoserve's programs and philosophy. Individual copies of the Newsletter are made available without charge. Send requests to Technoserve, Inc., 36 Old King's Highway South, Darien, Connecticut 06820, U.S.A.

TIMMER, C. PETER, John W. Thomas, Louis T. Wells, and David Morawetz, The Choice of Technology in Developing Countries. Center for International Affairs, Harvard University, Cambridge, Massachusetts 02138, U.S.A. The booklet features four case studies illustrating how intermediate technology using less capital and more labor may help to solve unemployment problems in developing countries.

Tools for Agriculture: A Guide to Hand-Operated and Animal-Drawn Equipment is the second edition of the Intermediate Technology Development Group's (ITDG) earlier publication Tools for Progress. The new guide lists some 27 suppliers of simple and inexpensive agricultural equipment. Available from ITDG, International Development Centre, Parnell House, 25 Wilton Road, London, SW1V 1JS, United Kingdom. Price: U.S. $1.50.

VITA News is a quarterly published by the Volunteers in Technical Assistance (VITA). It contains descriptions of VITA's current activities and provides a forum for the exchange of technical information on problems encountered by VITA representatives in the field and by individual subscribers. Subscriptions may be obtained by writing VITA, 3706 Rhode Island Avenue, Mt. Rainier, Maryland 20822, U.S.A.

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supply systems, processing and preserving food, and building low-cost housing. Price: U.S. $7.00.

WAGNER, RUDOLF, "Angepasste Technologie-Einfachtechnik fur Entwicklungslander?" discusses some of the problems involved in the application of appropriate technology to developing countries. The article, in German, is included in E & Z - Entwitklung und Susammenarbeit, Bonn, Germany, February 1976.

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